PEO (TAD, SC/AP) Industry Day

PMS-500 Technology Needs

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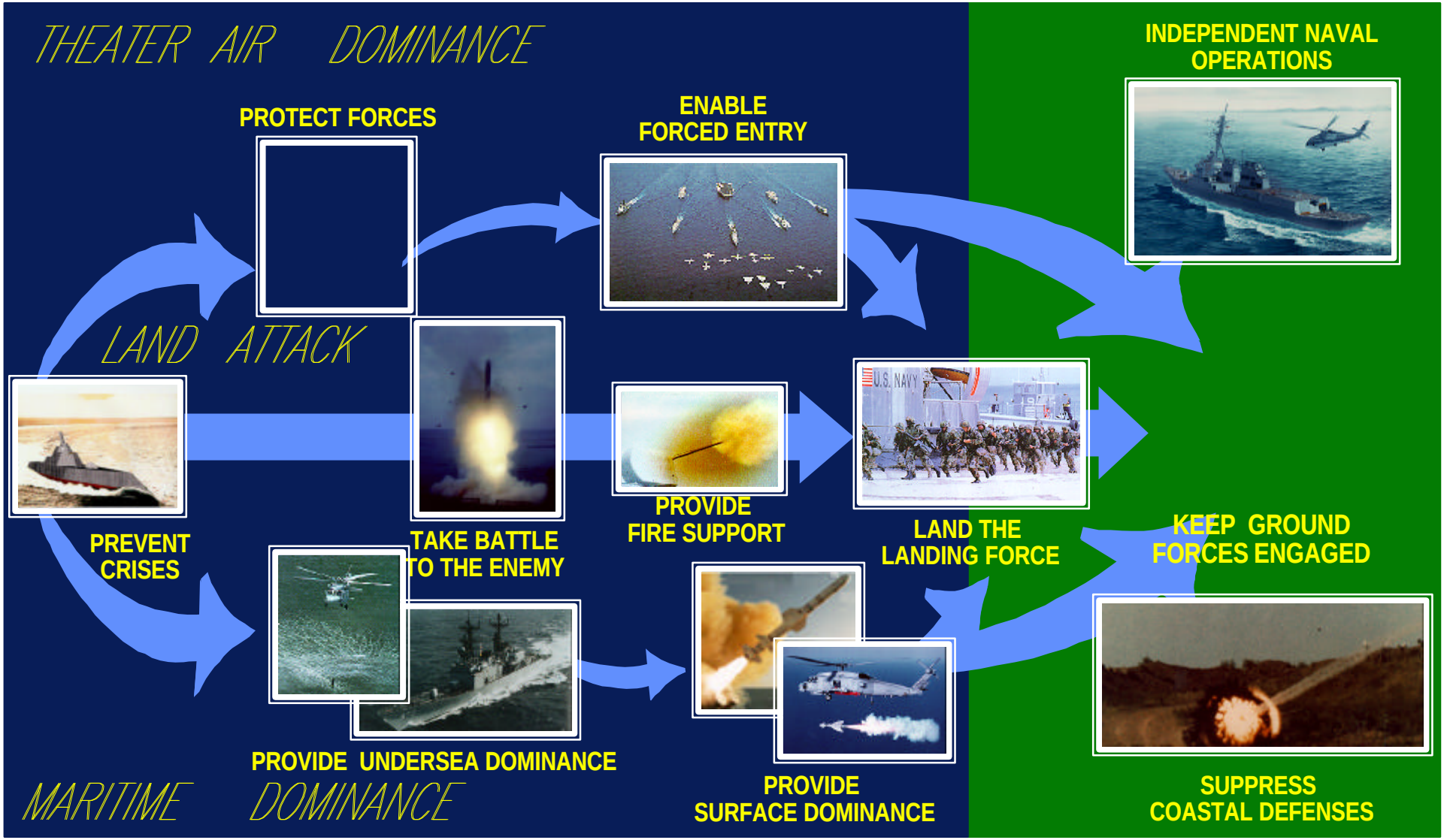
31 July 1997

Our Focus is on the Littoral



DD 21 Goals

- **Manning**
  - **30% of DDG-51 class**
- **Affordability**
  - **30% O&S costs of DDG-51 class**
- **Signature requirements**
  - **Balanced RCS, IR, Magnetic, Acoustic against threat**

High risk - high payoff
with significant risk mitigated by early 2002

PMS 500 Needs

Signatures & Integrated Topsides

- Low signature, multifunction or federated apertures supporting all mission areas (land attack, air defense, etc)
- Reduced maintenance topsides
- EMI control for simultaneous operations of sensors
- Affordable legacy system signature reduction
- Integrated sensors, communications, navigation, identification & electronic warfare
- Real-time, ownship total signature prediction, assessment and control

Manning Optimization

- Human system interface/displays improvement
- Embedded maintenance training
- Machinery/corrosion/security smart sensors
- Remote control/handling of shipboard equipment/ systems
- Handling of towed array & offboard unmanned vehicles and sensors
- Human reliability prediction under stress
- Automated gun, decoy and missile magazines

PMS 500 Needs

Integrated Logistics Support

- Condition, Information and Cognitive based maintenance technology
  - Advanced self diagnostics
  - Netted smart sensors to monitor equipment
    - » Low manufacture/installation costs
  - Fully automated
- Automated ship-wide calibration

Advanced Computing

- Multi level security
- Dynamic resource allocation
- Advanced reasoning systems

Survivability

- Artificial intelligence & controls to minimize the cascading of damage
  - Aimpoint
  - Warhead lethality
  - Ship design
- Advanced armoring technology
- Automated damage control
- Non-destructive, non-lethal fire suppression
  - Alternatives to halon and water-based systems
- Electric power survivability / restoration

Weapon Systems Support

- Low signature, optimally manned topside functions
  - Underway replenishment
  - Aircraft operations
  - Small watercraft launch and recovery
  - Structures and sheathings
- Affordable, efficient, low noise & survivable propulsor
- Increased energy density power supplies
  - Reliable and affordable

PMS 500 Needs

Air Defense

- Multifunction decoys
- Advanced IR decoys and reduced signature launchers
- Low cost / high rate-of-fire ship self defense
- Detect/control/engage of low signature weapons
- Protection vs. ballistic / diving weapons

Maritime Dominance

- Minehunting/avoidance for surface combatants
- Undersea warfare information integration
- Advanced sonar signal processing
- Affordable defense vs. small/fast surface raider
- Torpedo avoidance / defense / survivability
- Inport security versus divers and terrorists
- Multifunction decoys

Land Attack

- Alternative gun projectile propulsion
- Projectile navigation
- Inexpensive ordnance-on-target (+100 nm)
- Modular gun & missile launcher interfaces
- Ordnance rearming at sea w small crews
- High volume of fire ordnance
- Land target correlation & joint communications
- Modular case-less charges & projectiles

Joint C4ISR

- Multifunction or federated low signature apertures
- High capability digital communications
- Technologies that support adaptable/flexible command and control architecture
- Total situational awareness
  - Multi-sensor data correlation
  - Multi-spectral integration
  - Battle management
  - All-source data fusion & targeting

Summary

- **Engineered upfront for life cycle affordability**
  - **Open architecture**
  - **Optimum manning**
  - **Survivability**
  - **Modularity**
  - **Scaleability**

SC-21 program's highest priority ATD was highest priority for Navy the last 2 years